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SEQUENCE LISTING

<110> Moon, Chulso
Mao, Li

<120> DAP-Kinase and HOXA9, Two Human Genes Associated with Genesis, Progression, and Aggressiveness of Non-Small Cell Lung Cancer

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<140> 10/045,400
<141> 2001-11-29

<150> US 60/250,083
<151> 2000-11-29

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<170> PatentIn version 3.1

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Met Thr Val Phe Arg Gln
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Glu Asn Val Asp Asp Tyr Tyr Asp Thr Gly Glu Glu Leu Gly Ser Gly
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Tyr Ala Ala Lys Phe Ile Lys Lys Arg Arg Thr Lys Ser Ser Arg Arg
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Ile Gln His Pro Asn Val Ile Thr Leu His Glu Val Tyr Glu Asn Lys
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Leu His Leu Ala Ala Asn Gly Ile Leu Asp Val Val Arg Tyr Leu		
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Cys Leu Met Gly Ala Ser Val Glu Ala Leu Thr Thr Asp Gly Lys Thr		
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Leu Ala Arg Leu Arg Lys Asp Thr His Arg Gly Leu Phe Ile Gln Gln		
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Leu Arg Pro Thr Gln Asn Leu Gln Pro Arg Ile Lys Leu Lys Leu Phe		
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Gly His Ser Gly Ser Gly Lys Thr Thr Leu Val Glu Ser Leu Lys Cys		
695	700	705
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Gly Leu Leu Arg Ser Phe Phe Arg Arg Arg Pro Arg Leu Ser Ser		
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Thr Asn Ser Ser Arg Phe Pro Pro Ser Pro Leu Ala Ser Lys Pro Thr		
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Val Ser Val Ser Ile Asn Asn Leu Tyr Pro Gly Cys Glu Asn Val Ser		
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Val Arg Ser Arg Ser Met Met Phe Glu Pro Gly Leu Thr Lys Gly Met		
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Leu Glu Val Phe Val Ala Pro Thr His His Pro His Cys Ser Ala Asp		
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Val Gly Asp Phe Ser Val Trp Glu Phe Ser Gly Asn Pro Val Tyr Phe		
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tgc tgt tat gac tat ttt gct gca aat gat ccc acg tca atc cat gtt		2850
Cys Cys Tyr Asp Tyr Phe Ala Ala Asn Asp Pro Thr Ser Ile His Val		
825	830	835

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Val Val Phe Ser Leu Glu Glu Pro Tyr Glu Ile Gln Leu Asn Pro Val			
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Ile Phe Trp Leu Ser Phe Leu Lys Ser Leu Val Pro Val Glu Glu Pro			
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ata gcc ttc ggt ggc aag ctg aag aac cca ctc caa gtt gtc ctg gtg		2994	
Ile Ala Phe Gly Gly Lys Leu Lys Asn Pro Leu Gln Val Val Leu Val			
875	880	885	
gcc acc cac gct gac atc atg aat gtt cct cga ccg gct gga ggc gag		3042	
Ala Thr His Ala Asp Ile Met Asn Val Pro Arg Pro Ala Gly Gly Glu			
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Phe Gly Asn Asp Leu His Ile Ser Asn Lys Leu Phe Val Leu Asp Ala			
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Gly Ala Ser Gly Ser Lys Asp Met Lys Val Leu Arg Asn His Leu Gln			
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gaa ata cga agc cag att gtt tcg gtc tgt cct ccc atg act cac ctg		3234	
Glu Ile Arg Ser Gln Ile Val Ser Val Cys Pro Pro Met Thr His Leu			
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Cys Glu Lys Ile Ile Ser Thr Leu Pro Ser Trp Arg Lys Leu Asn Gly			
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Pro Asn Gln Leu Met Ser Leu Gln Gln Phe Val Tyr Asp Val Gln Asp			
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Gln Gln Leu His Ser Thr Gly Glu Ile Asn Ile Met Gln Ser Glu			
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Thr Val Gln Asp Val Leu Leu Leu Asp Pro Arg Trp Leu Cys Thr			
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Asn Val Leu Gly Lys Leu Leu Ser Val Glu Thr Pro Arg Ala Leu			
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cac cac tac cgg ggc cgc tac acc gtg gag gac atc cag cgc ctg		3555	
His His Tyr Arg Gly Arg Tyr Thr Val Glu Asp Ile Gln Arg Leu			
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Val Pro Asp Ser Asp Val Glu	Glu Leu Leu Gln Ile	Leu Asp Ala	
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Met Asp Ile Cys Ala Arg Asp	Leu Ser Ser Gly Thr	Met Val Asp	
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Val Pro Ala Leu Ile Lys Thr	Asp Asn Leu His Arg	Ser Trp Ala	
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Asp Glu Glu Asp Glu Val Met	Val Tyr Gly Gly Val	Arg Ile Val	
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Pro Val Glu His Leu Thr Pro	Phe Pro Cys Gly Ile	Phe His Lys	
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Val Gln Val Asn Leu Cys Arg	Trp Ile His Gln Gln	Ser Thr Glu	
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Gly Asp Ala Asp Ile Arg Leu	Trp Val Asn Gly Cys	Lys Leu Ala	
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aac cgt ggg gcc gag ctg ctg	gtg ctg ctg gtc aac	cac ggc cag	3915
Asn Arg Gly Ala Glu Leu Leu	Val Leu Leu Val Asn	His Gly Gln	
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Cys Cys Leu Leu Leu Asp Ser	Val Cys Ser Thr Ile	Glu Asn Val	
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Met Ala Thr Thr Leu Pro Gly	Leu Leu Thr Val Lys	His Tyr Leu	
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agc ccc cag cag ctg cg	gag cac cat gag ccc gtc	atg atc tac	4095
Ser Pro Gln Gln Leu Arg Glu	His His Glu Pro Val	Met Ile Tyr	
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Gln Pro Arg Asp Phe Phe Arg	Ala Gln Thr Leu Lys	Glu Thr Ser	
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Leu Thr Asn Thr Met Gly Gly	Tyr Lys Glu Ser Phe	Ser Ser Ile	
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Met Cys Phe Gly Cys His Asp	Val Tyr Ser Gln Ala	Ser Leu Gly	

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Thr	Lys	Ser	Ser	Arg	Arg	Gly	Val	Ser	Arg	Glu	Asp	Ile	Glu	Arg	Glu
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Val	Ser	Ile	Leu	Lys	Glu	Ile	Gln	His	Pro	Asn	Val	Ile	Thr	Leu	His
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115 120 125

Tyr Leu His Ser Leu Gln Ile Ala His Phe Asp Leu Lys Pro Glu Asn
130 135 140

Ile Met Leu Leu Asp Arg Asn Val Pro Lys Pro Arg Ile Lys Ile Ile
145 150 155 160

Asp Phe Gly Leu Ala His Lys Ile Asp Phe Gly Asn Glu Phe Lys Asn
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Ile Phe Gly Thr Pro Glu Phe Val Ala Pro Glu Ile Val Asn Tyr Glu
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Pro Leu Gly Leu Glu Ala Asp Met Trp Ser Ile Gly Val Ile Thr Tyr
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275 280 285

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Trp Lys Gln Ser Val Arg Leu Ile Ser Leu Cys Gln Arg Leu Ser Arg
305 310 315 320

Ser Phe Leu Ser Arg Ser Asn Met Ser Val Ala Arg Ser Asp Asp Thr
325 330 335

Leu Asp Glu Glu Asp Ser Phe Val Met Lys Ala Ile Ile His Ala Ile
340 345 350

Asn Asp Asp Asn Val Pro Gly Leu Gln His Leu Leu Gly Ser Leu Ser
355 360 365

Asn Tyr Asp Val Asn Gln Pro Asn Lys His Gly Thr Pro Pro Leu Leu
370 375 380

Ile Ala Ala Gly Cys Gly Asn Ile Gln Ile Leu Gln Leu Leu Ile Lys
385 390 395 400

Arg Gly Ser Arg Ile Asp Val Gln Asp Lys Gly Gly Ser Asn Ala Val
405 410 415

Tyr Trp Ala Ala Arg His Gly His Val Asp Thr Leu Lys Phe Leu Ser
420 425 430

Glu Asn Lys Cys Pro Leu Asp Val Lys Asp Lys Ser Gly Glu Met Ala
435 440 445

Leu His Val Ala Ala Arg Tyr Gly His Ala Asp Val Ala Gln Val Thr
450 455 460

Cys Ala Ala Ser Ala Gln Ile Pro Ile Ser Arg Thr Lys Glu Glu Glu
465 470 475 480

Thr Pro Leu His Cys Ala Ala Trp His Gly Tyr Tyr Ser Val Ala Lys
485 490 495

Ala Leu Cys Glu Ala Gly Cys Asn Val Asn Ile Lys Asn Arg Glu Gly
500 505 510

Glu Thr Pro Leu Leu Thr Ala Ser Ala Arg Gly Tyr His Asp Ile Val
515 520 525

Glu Cys Leu Ala Glu His Gly Ala Asp Leu Asn Ala Cys Asp Lys Asp
530 535 540

Gly His Ile Ala Leu His Leu Ala Val Arg Arg Cys Gln Met Glu Val
545 550 555 560

Ile Lys Thr Leu Leu Ser Gln Gly Cys Phe Val Asp Tyr Gln Asp Arg
565 570 575

His Gly Asn Thr Pro Leu His Val Ala Cys Lys Asp Gly Asn Met Pro
580 585 590

Ile Val Val Ala Leu Cys Glu Ala Asn Cys Asn Leu Asp Ile Ser Asn
595 600 605

Lys Tyr Gly Arg Thr Pro Leu His Leu Ala Ala Asn Asn Gly Ile Leu
610 615 620

Asp Val Val Arg Tyr Leu Cys Leu Met Gly Ala Ser Val Glu Ala Leu
625 630 635 640

Thr Thr Asp Gly Lys Thr Ala Glu Asp Leu Ala Arg Ser Glu Gln His
645 650 655

Glu His Val Ala Gly Leu Leu Ala Arg Leu Arg Lys Asp Thr His Arg
660 665 670

Gly Leu Phe Ile Gln Gln Leu Arg Pro Thr Gln Asn Leu Gln Pro Arg
675 680 685

Ile Lys Leu Lys Leu Phe Gly His Ser Gly Ser Gly Lys Thr Thr Leu
690 695 700

Val Glu Ser Leu Lys Cys Gly Leu Leu Arg Ser Phe Phe Arg Arg Arg
705 710 715 720

Arg Pro Arg Leu Ser Ser Thr Asn Ser Ser Arg Phe Pro Pro Ser Pro
725 730 735

Leu Ala Ser Lys Pro Thr Val Ser Val Ser Ile Asn Asn Leu Tyr Pro
740 745 750

Gly Cys Glu Asn Val Ser Val Arg Ser Arg Ser Met Met Phe Glu Pro
755 760 765

Gly Leu Thr Lys Gly Met Leu Glu Val Phe Val Ala Pro Thr His His
770 775 780

Pro His Cys Ser Ala Asp Asp Gln Ser Thr Lys Ala Ile Asp Ile Gln
785 790 795 800

Asn Ala Tyr Leu Asn Gly Val Gly Asp Phe Ser Val Trp Glu Phe Ser
805 810 815

Gly Asn Pro Val Tyr Phe Cys Cys Tyr Asp Tyr Phe Ala Ala Asn Asp

820	825	830	
Pro Thr Ser Ile His Val Val Val Phe Ser Leu Glu Glu Pro Tyr Glu			
835	840	845	
Ile Gln Leu Asn Pro Val Ile Phe Trp Leu Ser Phe Leu Lys Ser Leu			
850	855	860	
Val Pro Val Glu Glu Pro Ile Ala Phe Gly Gly Lys Leu Lys Asn Pro			
865	870	875	880
Leu Gln Val Val Leu Val Ala Thr His Ala Asp Ile Met Asn Val Pro			
885	890	895	
Arg Pro Ala Gly Gly Glu Phe Gly Tyr Asp Lys Asp Thr Ser Leu Leu			
900	905	910	
Lys Glu Ile Arg Asn Arg Phe Gly Asn Asp Leu His Ile Ser Asn Lys			
915	920	925	
Leu Phe Val Leu Asp Ala Gly Ala Ser Gly Ser Lys Asp Met Lys Val			
930	935	940	
Leu Arg Asn His Leu Gln Glu Ile Arg Ser Gln Ile Val Ser Val Cys			
945	950	955	960
Pro Pro Met Thr His Leu Cys Glu Lys Ile Ile Ser Thr Leu Pro Ser			
965	970	975	
Trp Arg Lys Leu Asn Gly Pro Asn Gln Leu Met Ser Leu Gln Gln Phe			
980	985	990	
Val Tyr Asp Val Gln Asp Gln Leu Asn Pro Leu Ala Ser Glu Glu Asp			
995	1000	1005	
Leu Arg Arg Ile Ala Gln Gln Leu His Ser Thr Gly Glu Ile Asn			
1010	1015	1020	
Ile Met Gln Ser Glu Thr Val Gln Asp Val Leu Leu Leu Asp Pro			
1025	1030	1035	
Arg Trp Leu Cys Thr Asn Val Leu Gly Lys Leu Leu Ser Val Glu			
1040	1045	1050	

Thr Pro Arg Ala Leu His His Tyr Arg Gly Arg Tyr Thr Val Glu
1055 1060 1065

Asp Ile Gln Arg Leu Val Pro Asp Ser Asp Val Glu Glu Leu Leu
1070 1075 1080

Gln Ile Leu Asp Ala Met Asp Ile Cys Ala Arg Asp Leu Ser Ser
1085 1090 1095

Gly Thr Met Val Asp Val Pro Ala Leu Ile Lys Thr Asp Asn Leu
1100 1105 1110

His Arg Ser Trp Ala Asp Glu Glu Asp Glu Val Met Val Tyr Gly
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Gly Val Arg Ile Val Pro Val Glu His Leu Thr Pro Phe Pro Cys
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Gly Ile Phe His Lys Val Gln Val Asn Leu Cys Arg Trp Ile His
1145 1150 1155

Gln Gln Ser Thr Glu Gly Asp Ala Asp Ile Arg Leu Trp Val Asn
1160 1165 1170

Gly Cys Lys Leu Ala Asn Arg Gly Ala Glu Leu Leu Val Leu Leu
1175 1180 1185

Val Asn His Gly Gln Gly Ile Glu Val Gln Val Arg Gly Leu Glu
1190 1195 1200

Thr Glu Lys Ile Lys Cys Cys Leu Leu Leu Asp Ser Val Cys Ser
1205 1210 1215

Thr Ile Glu Asn Val Met Ala Thr Thr Leu Pro Gly Leu Leu Thr
1220 1225 1230

Val Lys His Tyr Leu Ser Pro Gln Gln Leu Arg Glu His His Glu
1235 1240 1245

Pro Val Met Ile Tyr Gln Pro Arg Asp Phe Phe Arg Ala Gln Thr
1250 1255 1260

Leu Lys Glu Thr Ser Leu Thr Asn Thr Met Gly Gly Tyr Lys Glu
1265 1270 1275

Ser Phe Ser Ser Ile Met Cys Phe Gly Cys His Asp Val Tyr Ser
1280 1285 1290

Gln Ala Ser Leu Gly Met Asp Ile His Ala Ser Asp Leu Asn Leu
1295 1300 1305

Leu Thr Arg Arg Lys Leu Ser Arg Leu Leu Asp Pro Pro Asp Pro
1310 1315 1320

Leu Gly Lys Asp Trp Cys Leu Leu Ala Met Asn Leu Gly Leu Pro
1325 1330 1335

Asp Leu Val Ala Lys Tyr Asn Thr Asn Asn Gly Ala Pro Lys Asp
1340 1345 1350

Phe Leu Pro Ser Pro Leu His Ala Leu Leu Arg Glu Trp Thr Thr
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Tyr Pro Glu Ser Thr Val Gly Thr Leu Met Ser Lys Leu Arg Glu
1370 1375 1380

Leu Gly Arg Arg Asp Ala Ala Asp Leu Leu Leu Lys Ala Ser Ser
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Val Phe Lys Ile Asn Leu Asp Gly Asn Gly Gln Glu Ala Tyr Ala
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Arg Arg Arg Ala Arg His Ala Ser Arg Ala Ala Pro Glu Leu Val Gly	
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gat tta ggt agt ttc ctg ttg gga tcc acc ttt ctc tcg aca ggc	144
Asp Leu Gly Ser Phe Leu Leu Leu Gly Ser Thr Phe Leu Ser Thr Gly	
35 40 45	
acg aca ctg ccc ttc att act tca gtt gaa atc gtc tcc agg tac ctc	192
Thr Thr Leu Pro Phe Ile Thr Ser Val Glu Ile Val Ser Arg Tyr Leu	
50 55 60	
tgc g ^c g ^c g ^g t ^c g ^c g ^c g ^g c ^a t ^c c ^a g ^c c ^c t ^c g ^g t ^c g ^c	240
Cys Ala Arg Gly Ser Gly Arg Ala Gly His His Gly Pro Gly Arg Ala	
65 70 75 80	
agg cct g ^c g ^c g ^t g ^c a ^c t ^c g ^c t ^t c ^c t ^c g ^c t ^c a ^g g ^a g ^c t ^c c ^g t ^c	288
Arg Pro Ala Val Ala Thr Ser Ala Phe Pro Ala Gln Glu Pro Arg Val	
85 90 95	
ttt ctc cgc agc gct ttg cca gcc ggc cg ^g ctt tcc cct tcc acc aca	336
Phe Leu Arg Ser Ala Leu Pro Ala Gly Arg Leu Ser Pro Ser Thr Thr	
100 105 110	
cac ctc cac ctg gtc aca gca gat aac cca gca gcc aac tgg ctt cat	384
His Leu His Leu Val Thr Ala Asp Asn Pro Ala Ala Asn Trp Leu His	
115 120 125	
g ^c g ^c t ^c c ^a t ^c c ^g a ^a a ^a g ^a g ^c t ^c c ^c t ^c t ^a t ^c a ^a a ^a c ^a c ^a g ^a c ^c	432
Ala Arg Ser Thr Arg Lys Lys Arg Cys Pro Tyr Thr Lys His Gln Thr	
130 135 140	
ctg gaa ctg gag aaa gag ttt ctg ttc aac atg tac ctc acc agg gac	480
Leu Glu Leu Glu Lys Glu Phe Leu Phe Asn Met Tyr Leu Thr Arg Asp	
145 150 155 160	
cgc agg tac gag gtg gct cga ctg ctc aac ctc acc gag agg cag gtc	528
Arg Arg Tyr Glu Val Ala Arg Leu Leu Asn Leu Thr Glu Arg Gln Val	
165 170 175	
aag atc tgg ttc cag aac cgc agg atg aaa atg aag aaa atc aac aaa	576
Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Met Lys Ile Asn Lys	
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Arg Arg Arg Ala Arg His Ala Ser Arg Ala Ala Pro Glu Leu Val Gly
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Asp Leu Gly Ser Phe Leu Leu Leu Gly Ser Thr Phe Leu Ser Thr Gly
35 40 45

Thr Thr Leu Pro Phe Ile Thr Ser Val Glu Ile Val Ser Arg Tyr Leu
50 55 60

Cys Ala Arg Gly Ser Gly Arg Ala Gly His His Gly Pro Gly Arg Ala
65 70 75 80

Arg Pro Ala Val Ala Thr Ser Ala Phe Pro Ala Gln Glu Pro Arg Val
85 90 95

Phe Leu Arg Ser Ala Leu Pro Ala Gly Arg Leu Ser Pro Ser Thr Thr
100 105 110

His Leu His Leu Val Thr Ala Asp Asn Pro Ala Ala Asn Trp Leu His
115 120 125

Ala Arg Ser Thr Arg Lys Lys Arg Cys Pro Tyr Thr Lys His Gln Thr
130 135 140

Leu Glu Leu Glu Lys Glu Phe Leu Phe Asn Met Tyr Leu Thr Arg Asp
145 150 155 160

Arg Arg Tyr Glu Val Ala Arg Leu Leu Asn Leu Thr Glu Arg Gln Val
165 170 175

Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Met Lys Lys Ile Asn Lys
180 185 190

Asp Arg Ala Lys Asp Glu
195